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Chapter 4 Cross Section Information Input

From the Cross Section Information tab in the Edit/Highway Data dialog box the following data may be set:

- Cross Slope (Superelevation)
- Pavement Type
- Surface Type
- Shoulder Slope
- Variable Shoulder Slope
- Shoulder Width
- Shoulder Material
- Shoulder Category



The Cross Slope Information was input in [Chapter 2](#)


The following workflows will guide the user on how to input each set of data using IHSDM. The title of the workflow will also indicate the modules that use that data in parenthesis. Therefore, if the user does not want a certain module, they will not waste time importing data that is not needed.

Pavement Type

IHSDM utilizes the following pavement types:

- High-type; Pavements are those that retain smooth riding qualities and good non-skid properties in all weather under heavy traffic volume and loadings with little maintenance. (i.e. use where there is > 10% commercial truck traffic or ADT > 2000)
- Intermediate-type; Pavements are those designed to retain smooth riding qualities and good non-skid properties in all weather, but under lighter truck loads and lesser traffic volumes. (i.e. where commercial truck traffic < 10% and ADT < 2000)
- Low-type; Pavements are those with treated earth surfaces and those with loose aggregate surface.

Workflow 1: Pavement Type (PRM, IRM)

1. *Pick the Edit/View Highway Data button  while in the Main IHSDM Dialog box. This dialog box is shown in step 16 of [workflow 2 in chapter 2](#).*

- Click on the Cross Section>Pavement Tabs and the following dialog box will appear:



If there is a large amount of superlevation data, do not pick the Cross Slope tab. The dialog box may take a little while to populate.

- Pick the Add button in the middle of the dialog box to get the following dialog box:

Fill in the proper information and pick Save. Notice that IHSDM filled the fields with the beginning and ending stations. If the pavement type changes within the project, additional lines can be added by simply picking the Add button again.

Workflow 2: Surface Type data (PRM)

1. Click on the Cross Section>Pavement Tabs of the Edit/View Highway Data dialog box to get the following dialog box:

The screenshot shows the 'Edit/View Highway Data' dialog box with the 'Cross Section' tab selected. Within this tab, the 'Pavement' sub-tab is active. The dialog is divided into several sections:

- General:** Includes tabs for 'Cross Slope', 'Pavement', and 'Shoulder'. The 'Pavement' sub-tab is selected.
- Pavement Type Table:** A table with columns 'Start Sta.', 'End Sta.', and 'Pavement Type'. It is currently empty. To the right of the table are buttons: 'Add', 'Clone', 'Delete', 'Edit', and 'Help'.
- Surface Type Table:** A table with columns 'Start Sta.', 'End Sta.', and 'Surface Type'. It is also empty. To the right of the table are buttons: 'Add', 'Clone', 'Delete', 'Edit', and 'Help'.
- Highway Information:** A section with fields for 'Highway Name' (Indian Creek), 'Chain' (none), 'Comment' (unspecified), 'File' (Indian_Creek), 'Minimum Station' (1+000.000), and 'Maximum Station' (18+623.694).
- Editor Messages:** A text area showing 'No errors'.

2. Pick the Add button on the right to get the following dialog box:

The screenshot shows the 'Add/Edit Surface Type' dialog box. It contains the following fields and controls:

- Surface Type:** A label for the section.
- Start Sta.:** A text field containing '1+000.000'.
- End Sta.:** A text field containing '18+623.694'.
- Surface Type:** A dropdown menu currently showing 'paved'.
- Help Items:** A button with a question mark icon.
- Save:** A button with a green checkmark icon.
- Cancel:** A button with a red 'X' icon.

Fill in the proper information and pick Save. The two options for surface are paved and aggregate. Notice that IHSDM filled the fields with the beginning and ending stations. If the Surface type changes within the project, additional lines can be added by simply picking the Add button again.

Shoulder, Normal Slope

Shoulder, Normal Slope is the slope of the shoulder in tangent sections. Show the normal slope throughout the whole project and use the Shoulder Slope shown in Workflow 4 to model the shoulder slope through curves due to superelevation.

Workflow 3: Shoulder, Normal Slope (PRM)

1. Click on the Cross Section>Shoulder>Normal Slope Tabs of the Edit/View Highway Data dialog box to get the following dialog box:

2. Pick the Add button to get the following dialog box:

Fill in the proper information and pick Save. Notice that IHSDM filled the fields with the beginning and ending stations. If the normal shoulder slope changes within the project, additional lines can be added by simply picking the Add button again. For localized shoulder changes, use the Shoulder Slope workflow described in Workflow 4.

The next workflow allows the user to input areas that the shoulder slope would vary from normal shoulder slope due to superelevation. This would be a good situation to use the Excel input method shown in Workflow 8 if there are many curves in the alignment. The user can

populate the fields using the cross section shape input file relatively quickly.

Workflow 4: Shoulder Slope (PRM)

1. Click on the Cross Section>Shoulder>Slope tabs of the Edit/View Highway Data dialog box to get the following dialog box:

The screenshot shows the 'Edit/View Highway Data' dialog box. The 'Shoulder' tab is selected under the 'Cross Section' category. The 'Shoulder Slope' sub-tab is active, displaying a table with columns: Start Sta., Side of Road, Begin Full Slope, Slope (%), End Full Slope, and End Sta. Below the table, a message states 'This element is used by PRM.' The bottom section contains 'Highway Information' fields: Highway Name (Indian Creek), Chain (none), Comment (unspecified), File (Indian_Creek), Minimum Station (1+000.000), and Maximum Station (18+623.694). To the right, the 'Editor Messages' section shows 'No errors'.

2. Pick the Add button to get the following dialog box:

The screenshot shows the 'Add/Edit Shoulder Slope' dialog box. It contains input fields for 'Start Sta.', 'Side of Road' (which is set to 'both'), 'Begin Full Slope', 'Slope (%)', 'End Full Slope', and 'End Sta.'. Below these fields is a 'Help Items' button. At the bottom of the dialog are 'Save' and 'Cancel' buttons.

Fill in the proper information and pick Save. Start Sta. is where the shoulder slope starts to vary from the normal slope, Begin Full Slope is where the shoulder is done transitioning to new slope. If the Shoulder Slope changes within the project, additional lines can be added by simply picking the Add button again.

Workflow 5: Shoulder Width (PRM, CPM)

1. Click on the Cross Section>Shoulder>Width Tabs of the Edit/View Highway Data dialog box to get the following dialog box:

The screenshot shows the 'Edit/View Highway Data' dialog box with the 'Shoulder Width' tab selected. The dialog has a menu bar (File, View) and a toolbar. Below the toolbar are tabs for General, Horizontal, Vertical, Cross Section, Lane, Roadside, and Other. Under the Cross Section tab, there are sub-tabs for Cross Slope, Pavement, and Shoulder. The Shoulder tab is active, showing sub-tabs for Normal Slope, Slope, Width, Material, and Category. The 'Width' sub-tab is selected, displaying a table with columns: Station, Side of Road, and Shoulder Width (m). The table is currently empty. To the right of the table are buttons: Add, Clone, Delete, Edit, and Help. Below the table, a note states 'This element is used by PRM and CPM.' At the bottom, there is a 'Highway Information' section with fields for Highway Name (Indian Creek), Chain (none), Comment (unspecified), File (Indian_Creek), Minimum Station (1+000.000), and Maximum Station (18+623.694). To the right of this is an 'Editor Messages' section showing 'No errors'.

2. Pick the Add button to get the following dialog box:

The screenshot shows the 'Add/Edit Shoulder Width' dialog box. It has a title bar with a close button. The dialog contains three input fields: Station (with the value 1+000.000), Side of Road (a dropdown menu showing 'both'), and Shoulder Width (m) (with the value 1.0). Below these fields is a 'Help Items' button. At the bottom of the dialog are two large buttons: 'Save' (with a green checkmark icon) and 'Cancel' (with a red X icon).

3. Fill in the beginning station of the alignment, provide the correct Shoulder width and pick Save.
4. Since IHSDM only allows one station in this dialog box, the user will have to pick Add again and fill in the end station of the constant shoulder width. If the shoulder width varies in the project, the user will need to repeat this process for each change in constant shoulder width. IHSDM will straight line interpolate between stations where the shoulder width changes.

Workflow 6: Shoulder Material (PRM, CPM)

1. Click on the Cross Section>Shoulder>Material Tabs of the Edit/View Highway Data dialog box to get the following dialog box:

The screenshot shows the 'Edit/View Highway Data' dialog box with the 'Shoulder Material' tab selected. The dialog has a menu bar (File, View) and a toolbar. Below the toolbar are tabs for General, Horizontal, Vertical, Cross Section, Lane, Roadside, and Other. Under 'Cross Section', there are sub-tabs for Cross Slope, Pavement, and Shoulder. The 'Shoulder' tab is active, showing sub-tabs for Normal Slope, Slope, Width, Material, and Category. The 'Material' sub-tab is selected, displaying a table with columns: Start Sta., End Sta., Side of Road, and Type of Shoulder Material. The table is currently empty. To the right of the table are buttons: Add, Clone, Delete, Edit, and Help. Below the table, a note states 'This element is used by PRM and CPM.' At the bottom, there is a 'Highway Information' section with fields for Highway Name (Indian Creek), Chain (none), Comment (unspecified), File (Indian_Creek), Minimum Station (1+000.000), and Maximum Station (10+623.694). To the right of this is an 'Editor Messages' section showing 'No errors'.

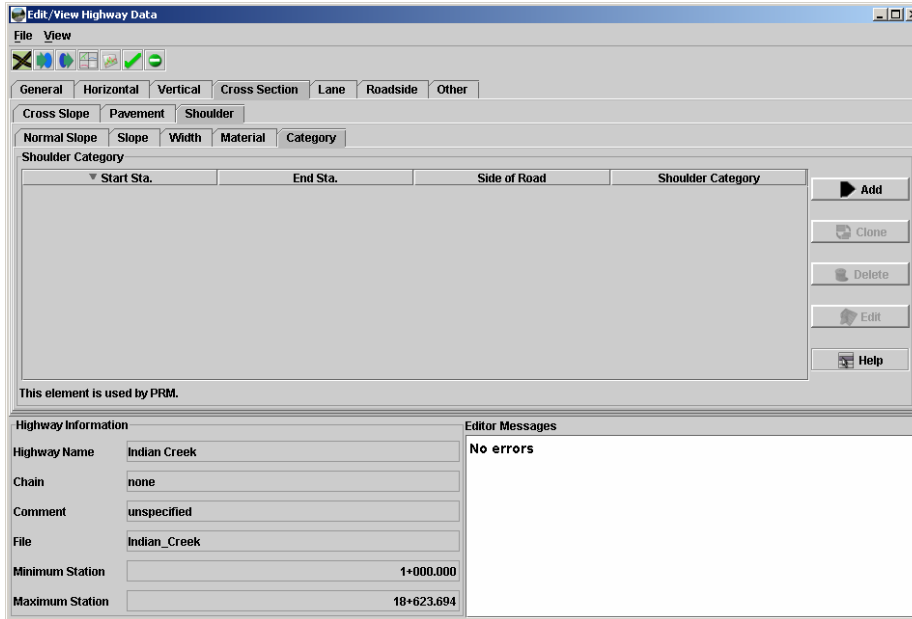
2. Pick the Add button to get the following dialog box:

The screenshot shows the 'Add/Edit Shoulder Material' dialog box. It has a title bar with a close button. The dialog is titled 'Shoulder Material'. It contains four input fields: Start Sta. (1+000.000), End Sta. (9+500.000), Side of Road (both), and Type of Shoulder Material (paved). Below these fields is a 'Help Items' button. At the bottom are 'Save' and 'Cancel' buttons.

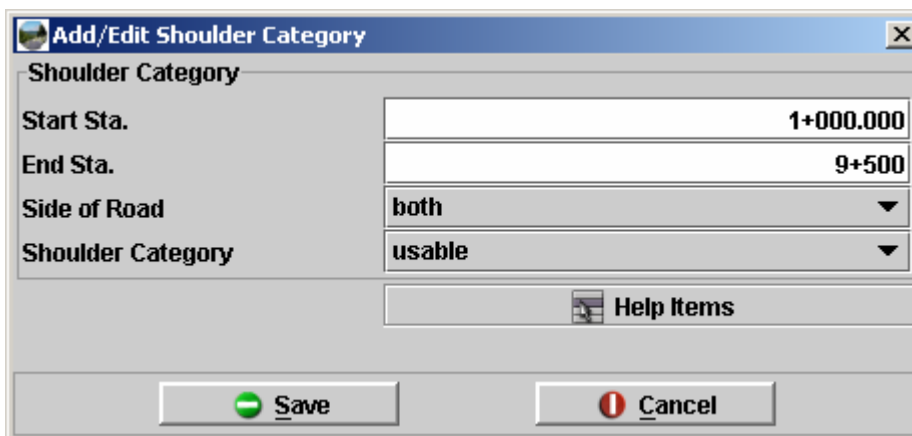
Fill in the proper information and pick Save. Notice that IHSDM automatically inserted the beginning and ending stations. If the Shoulder Material changes within the project, additional lines can be added by simply picking the Add button again.

Workflow 7: Shoulder Category (PRM)

1. Click on the Cross Section>Shoulder>Category Tabs of the Edit/View Highway Data dialog box to get the following dialog box:



2. Pick the Add button to get the following dialog box:



3. Fill in the proper information and pick Save. The Shoulder Categories to choose from are useable and graded. A useable shoulder can be driven on and a graded shoulder cannot be. Notice that IHSDM automatically put the beginning and ending stations in. If the Shoulder Category changes within the project, additional lines can be added by simply picking the Add button.

Using an Excel file

The Excel file with the correct format for importing Cross Section Information into IHSDM is DEA.Cross Section.xls. This file can be found in:

N:\Standards\IHSDM\

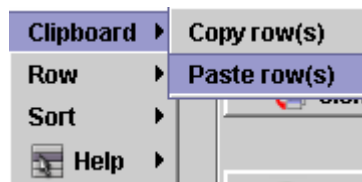
or on the CFLHD web site at the following link:

<http://www.cflhd.gov/ihsdm.cfm>

When you open this file, there is a read me worksheet along with 8 other worksheets that will be used to input all the general information. Each worksheet will describe what each variable is and what it is used for. The following workflow will describe the process for entering this information into IHSDM.

Workflow 8: Excel Input

1. *Enter the correct data in the Excel spreadsheet.*
2. *Highlight the entered data and go to Edit>Copy.*
3. *Click on the General Tab of the Edit/View Highway Data dialog box.*
4. *Pick the corresponding tab for the data to be inserted.*
5. *Pick the Add button.*
6. *Put dummy information in the data fields. Pick the Save button. This creates a line in the Edit/View Highway Data dialog box. The user will delete this line after the correct information is imported.*
7. *With the mouse over the line just put in, right mouse click to get the following dialog box:*



8. *Choose Clipboard>Paste row(s). The information will be loaded into IHSDM.*
9. *Delete the line with the incorrect data.*



Notice that this procedure is most useful when there are more than a couple of lines of data.